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(54) Title: GOLF CLUB			
(57) Abstract			
<p>A long putter, adjustable in length to suit the golfer's stature and preferred posture, with a single long adjustable putter grip, where the grip may have a reverse taper and/or be non circular in cross section, and may be grasped with an inter-woven finger gripping technique. The putter may be used in a simple pendulum type putting stroke, with minimal wrist flexure. A method of putting where the top of the putter makes direct contact with the sternum depression, thereby stabilising the top of the putter against the body, and extending both arms comfortably to grasp the lower portion of the grip, the hands being in direct contact with each other. To strike the ball, the golfer rotates the triangular unit of arms and shoulders, together with the putter, about an axis point which would be, near his spinal column, and behind his sternum depression.</p>			

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GOLF CLUB**TECHNICAL FIELD**

5 This invention relates to improvements made to golf clubs, and particularly to golf clubs used as putters.

BACKGROUND ART

10 Golf has become a popular recreational game.

In the game of golf a ball is played from the teeing ground to the putting green by successive strokes, and once on the putting green into the hole , using a specialised club called a putter.

15 A conventional short putter (Fig.1) is between 75 and 90 cm. in total length, and has a single grip 1 located at the top end of the shaft 2. The player grasps the single grip with both hands (Fig.2) when putting the ball with the putter head 3.

20 Whilst the use of a putter is an apparently simple action , it is perhaps the part of golf which is least reliable from day to day. A common problem that golfers experience when putting is excessive wrist flexure, or hinging of the wrists, when swinging their putter, which contributes to inconsistency of both direction and distance control.

An extreme form of poor putting is a condition known as the "yips", whereby the golfer has greatly excessive wrist flexure in his/her stroke, sometimes accompanied by excessive body movement as well. It has been known for golfers suffering from the putting "yips" to occasionally even miss the ball completely.

25 Many famous golfers ,including Sam Snead, Ben Hogan, Bernhard Langer, and Tom Watson have had periods of very unreliable short distance putting, using conventional short putters.

To improve their putting some golfers are no longer using a conventional short putter, and are now using a long putter (Fig.3) in a simple pendulum type putting action.

30 A long putter is between 100 and 130 cm. in total length, and has two grips, an upper grip 4 located at the top end of the shaft 5, and a lower grip 6 below it on the shaft . The player grasps the upper grip with one hand when putting the ball, and this upper hand is stabilised against the body, usually the chest (Fig.4), or chin, and remains

relatively stationary during the putting stroke. The other hand grips the lower grip 6, providing the force to hit the ball, and the putter is pivoted with this lower hand from a pivot point in the approximate area of the upper hand.

5 A disadvantage of this method is that it is quite different to conventional short putter technique and requires considerable practice to re-establish the golfer's confidence in his/her new putting technique.

A second disadvantage is that only the one hand, the lower hand, is involved in applying force to the putt and this makes it harder to reliably control the path of the club.

10 A third disadvantage is that the very unusual looking split-hand gripping method, which has the hands some 40 to 60cm. apart, and one elbow raised up 7, draws attention, embarrassing the golfer, and signifies to many observers that the golfer has had trouble with short putts, a condition known as the "yips".

15 Almost all conventional short putters have a non-circular section grip, some of which 8,9,10 are illustrated in Fig.5. This indicates the very strong preference by golfers for non-circular cross section putter grips. However long putters, having two grips, must only use grips of circular cross section 11. This is required by Rules of Golf (1996 edition, Appendix 2, 4-1c). This is a further disadvantage for golfers using the long putter.

(In the 1996 Walt Disney Open, which is a regular United States Professional Golfer's 20 Association Tour event, a golfer named Taylor Smith was the joint leader after the completion of 72 holes, but was then disqualified for using a non-conforming grip. Taylor Smith was using a long putter with two grips but one of them was non-circular and therefore in breach of the Rules of Golf)

25 Because of these four disadvantages less than 2 % of golfers presently use a long putter.

A number of patents have dealt with improvements to putters and putting technique to enable better putting. Many of these have attempted to improve the design and use of long putters

30 Parmley, 1965 (US Patent 3,188,086) describes a method of putting where the putter shaft extends above and beyond the end of the putter grip so that the shaft extension may connect with the abdomen via a pivot member on the end of the shaft. This enables the top of the putter to be stabilised against the abdomen, but the shaft extension is illegal for play according to the Rules of Golf (Rule 4)

Bernhardt 1979 (US Patent 4,163,554) describes a method of putting using an elongated putter, with two gripping portions, and putting in a side saddle manner whilst facing the hole. The hand which holds the upper grip portion is stabilised against the body, and the putter is pivoted from this area. This method has been found cumbersome
5 and difficult to use especially with longer putting distances

Thomas, 1995 (US Patent 5,452,891) describes an extension device to convert a conventional short putter to the long putter twin grip form. However this device, being easily adjustable, is in breach of the Rules of Golf (28th Edition, 1996, Appendix 2, Rule
10 4-1a(i)).

Scheie et al. 1996 (US Patent 5,531,446) describes a putting training aid which is an elongated rod with a ball on one end. When inserted in the end of a putter the movement of the ball relative to the body identifies if there is excessive wrist flexure when swinging
15 the putter. This training aid is illegal for play according to the Rules of Golf (28th Edition, 1996, Appendix 2, Rule 4-1a(i)). Also it does not seek to restrict wrist flexure but to identify it.

Present golf club grips are between 24 and 29cm in length and occupy a volume less
20 than 150 cubic centimetres. The maximum cubic capacity of a golf grip available is a 'Jumbo' branded grip which, together with the space it surrounds, occupies a volume of less than 180 cubic centimetres.

Present long putter technique uses a split grip method. An improvement on the
25 present art would be a putter which, is legal for play, allows the preferred non-circular grip section, and is adjustable to suit the golfer's stature and preferred posture, and is used in a way which is more like conventional putting technique, whilst restricting unwanted wrist flexure.

DISCLOSURE OF INVENTION

This invention describes a putter (Fig.6/7/8) which is legal for play, having a single long grip 12,13,14, preferably of non-circular section. This grip may be greater than 35 cm in length, may be re-positioned (Fig.9) up and down the shaft , in a variety of positions, and secured in place to suit the golfer's stature and preferred posture.

This invention describes a putter which enables the golfer to stabilise the top of the putter by engaging it with his/her body. Various parts of the upper body when so engaged serve as a stabilisation point, some of these being; the navel, the rib cage area of the chest, the sternum depression of the chest, or the armpit.

Having achieved this stabilisation the putter grip may then be grasped in the normal two handed way with the golfer's hands, or preferably by inter-weaving his/her fingers about the grip as described below (Fig.10a/b/c). In either case the hands are in direct contact with each other, whilst grasping the grip, which is in marked contrast to how long putters are currently used . (Fig.4)

In this way the putter is stabilised by body contact, but may be grasped in a normal way otherwise, using a similar posture to normal.

This invention provides for a method of putting with a long putter, where the stabilisation point is in the area of the sternum depression, so that with arms comfortably extended a strong triangle shape is formed by the arms and the horizontal line across the shoulders (Fig.11a/11b). This triangular unit of arms and shoulders 16,(shaded in Fig.11b) together with the putter shaft 17 extending from the apex of the triangular unit to the ball, is able to easily rotate about an axis point which would be near the spinal column and behind the sternum depression of the chest. This arrangement is advantageous as it facilitates a simple repeatable putting stroke, with minimal wrist flexure.

As the upper portion of the putter grip merely serves to make contact with the stabilisation point, it does not need to be as thick as a normal putter grip, and to avoid excess weight it is advantageous for the grip to be narrower at the top 19. Therefore this invention describes a grip which has a reverse taper so that the grip's greatest diameter at it's lower end 20, nearer the putter head 3 (Fig.6 and Fig.11b).

The Rules of Golf allow a putter with out a grip and indeed a "grip-less" long putter could be used with the golfer stabilising the top of the putter by engaging it with his/her body. This putter would be effective in use, by achieving stabilisation. With a thicker shaft the inter-woven fingers gripping technique could be used to advantage. Therefore 5 this invention describes a putter with no grip on the shaft ,or no grip but a thin, substantially uniform thickness covering on said shaft, and a total putter length greater than 100cm. The taper of the shaft of this "grip-less" putter could be in several forms, several of which are shown in Fig.12a/b/c

Golfers have various heights and preferred postures when putting and it is 10 advantageous if the golfer can fine tune the putter to suit his/her requirements. Therefore this invention describes a putter with less than two grips, where any of the following putter characteristics may be varied, and made secure:

1. the grip may slide up and down on the shaft (Fig.9)
2. the actual length of the shaft be adjusted, probably by a telescopic means.
- 15 3. the actual length of the grip itself may be adjustable.
4. the grip may be removed completely and replaced with a conventional short-putter grip if the golfer wishes. (Fig.1)

This invention provides for a grip technique where the fingers are inter-woven about the putter grip (Fig.10a/b/c). To grasp the putter the golfer first interweaves his/her 20 fingers, left fore finger below right fore finger as shown, or vice versa. The fingers of each hand then alternate, so that when the putter is grasped each finger of the left hand is separated from it's adjacent finger of the left hand by a finger of the right hand, and vice versa. The palms are then brought towards each other to securely hold the putter grip (Fig.10c).

25 The advantage of this grip technique is that both hands are close to the apex of the triangular unit of arms and shoulders described above. This makes the triangular unit even simpler and stronger. Also this grip technique allows the golfer to simply place the ball in the centre of his stance and with the hands being extended the same distance down the putter grip, this allows his shoulder line to be parallel to the ground at address. With 30 the shoulders parallel to the ground at address it is less likely the shoulders will be "open" at address, a common fault where the shoulder line points to the left of the target for a right handed golfer, and therefore more likely the shoulders will remain parallel to the target line at address. This arrangement improves the golfer's ability to aim correctly.

To grasp in the inter-woven fingers technique described above, a thicker grip is considerably easier to grasp. This is because the putter grip is grasped more in the palms than the fingers in this technique. As the putter grip will be both thicker than normal, and also longer than normal, the volume of the grip will be substantially greater than a normal grip. Therefore this invention describes a putter grip where the grip, together with the space it surrounds, may occupy a volume in excess of 225 cubic centimetres, a much greater volume than normal.

BRIEF DESCRIPTION OF DRAWINGS

10

Fig. 1 is a conventional short putter with a short grip.

Fig. 2 shows the method of using a conventional short putter, grasping the single grip with both hands.

Fig. 3 is a long putter as currently available, with two spaced short grips.

15 Fig. 4 shows the method of using a long putter as currently available.

Fig. 5 shows some cross sections of putter grips.

Fig. 6 is a long putter with a single long grip, which tapers so that the cross section of the grip is greater towards the putter-head end.

Fig. 7 is a long putter with a single long grip, which has no taper.

20 Fig. 8 is a long putter with a single long grip, which tapers so that the cross section of the grip is greater towards the sternum end, when in use.

Fig. 9 shows that a grip may slide up and down the putter, and be used in a variety of positions, or indeed be removed completely.

Fig. 10a/b/c shows three steps in grasping the putter grip using the inter-woven fingers method.

25 Fig. 11a/b demonstrates the effect of hand position, on the tilt of the shoulders.

Fig. 12 a/b/c are variations of the shaft taper of a grip-less putter, Fig. 12a represents a two way taper from a point between the two ends, Fig. 12b represents a putter shaft which tapers so that the cross section of the grip is greater towards the upper end, 30 when in use, and Fig. 12c represents a putter shaft which tapers so that the cross section of the grip is greater towards the lower, putter-head, end.

BEST MODE FOR CARRYING OUT THE INVENTION

The preferred embodiment of this invention is a long putter, with a single long
adjustable putter grip, where the grip has a reverse taper and is non circular in cross
5 section

The top of the putter is stabilised in the sternum depression and the arms comfortably
extended to grasp the thicker lower portion of the grip by inter-weaving the fingers
about the putter grip

To strike the ball ,the golfer rotates this triangular unit of arms and shoulders,
10 together with the putter, about an axis point which would be near his spinal column and
behind his sternum depression.

The preferred embodiment so described is a putter which is legal for play,
adjustable to suit the golfer's stature and preferred posture, using a inter-woven finger
gripping technique, and facilitates a simple repeatable putting stroke, with minimal wrist
15 flexure.

INDUSTRIAL APPLICABILITY

The invention described has the advantage of being adjustable to a variety of
20 gripping technique preferences and putting postures.

It enables the golfer to putt in a simple but effective way and not draw too much
attention to this style.

The reverse taper grip reduces the volume of materials required, and therefore
manufacturing cost, and also reduces weight, improving balance, and may be removed
25 and replaced with an alternative grip for a time if desired.

The grip may be removed from the putter shaft for ease of packaging, and to reduce
shipment costs.

The grip may be marketed as a separate item or with a particular putter-head/putter-
shaft.

CLAIMS**I Claim:**

- 5 1. A golf club grip with a length greater than 35cm.
2. A golf club grip as in claim 1 which is other than circular in cross section.
3. A golf club grip that has a greater cross sectional diameter in the region of it's lower end, closest to the club-head, than in the region of it's upper end, furthermost from the club-head.
- 10 4. A golf club grip, together with the space it surrounds, occupies a volume exceeding 225 cubic centimetres.
5. A golf club grip, as in claims 1 or 2 or 3 or 4, which may be adjusted on the golf club shaft, and secured in various positions.
6. A golf club grip which is adjustable in length.
- 15 7. A golf club over 100 cm. in total length, with less than three grips ,where a gripping portion of the club is other than circular in cross section.
8. A golf club two or less grips ,where the gripping portion of the club has a reverse taper, so that it has a greater cross sectional diameter at it's lower end, closest to the ball, than it's upper end.
- 20 9. A golf club over 100cm. in length, designed for use as a putter, with no putter grip on the shaft.
10. A golf club as in claim 9, with a thin substantially uniform thickness covering on said shaft .
11. A method of grasping a putter by inter-weaving alternate fingers of the two hands
- 25 fingers, the fingers of each hand alternating, so that when the putter is grasped each finger of the left hand is separated from it's adjacent finger of the left hand by a finger of the right hand, and vice versa.
12. A method of putting where the top of the putter makes direct contact with the chest, in the area of the sternum depression, and the hands are in direct contact with each
- 30 other, whilst grasping the grip.
13. The method of converting a short putter, where the total length of the putter-head and the putter-shaft combined is less than 100cm., to a long putter, over 100cm., by using a long grip on the shaft of said short putter.

1/3

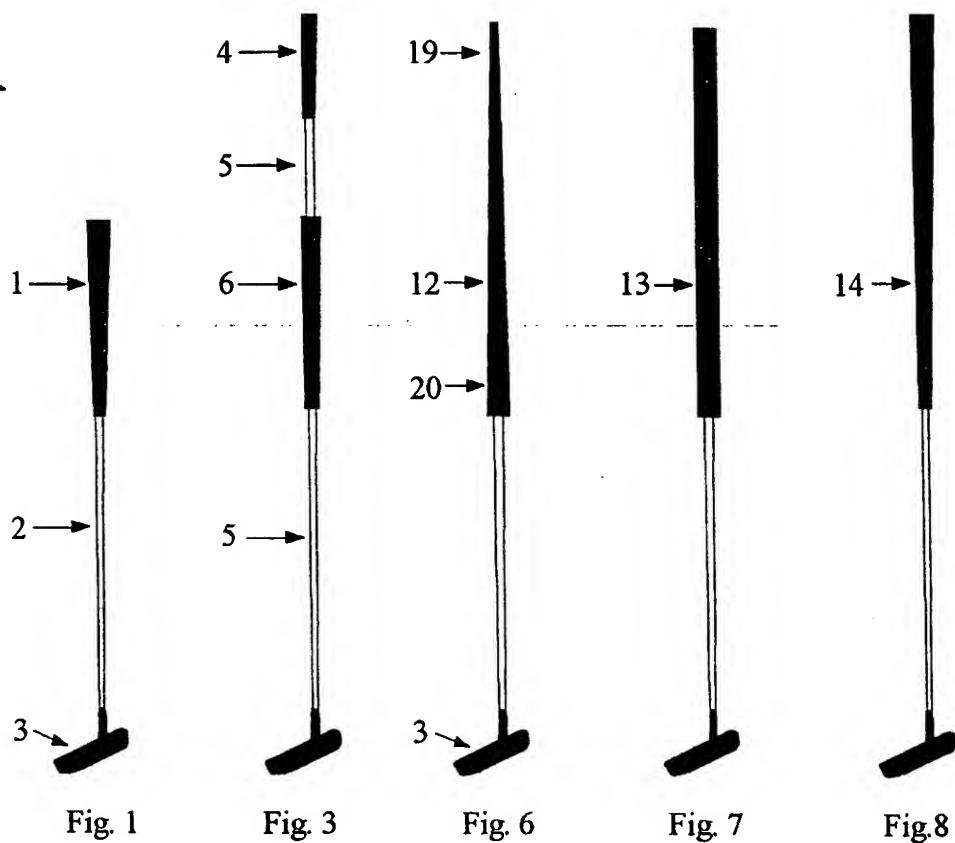


Fig. 1

Fig. 3

Fig. 6

Fig. 7

Fig. 8

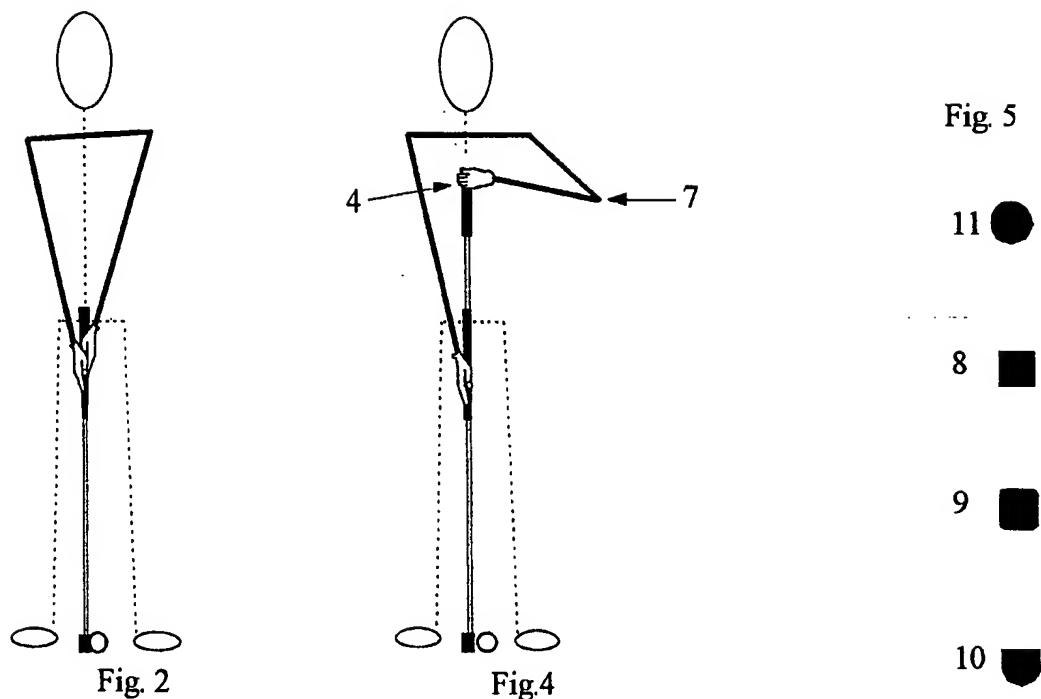


Fig. 2

Fig. 4

Fig. 5

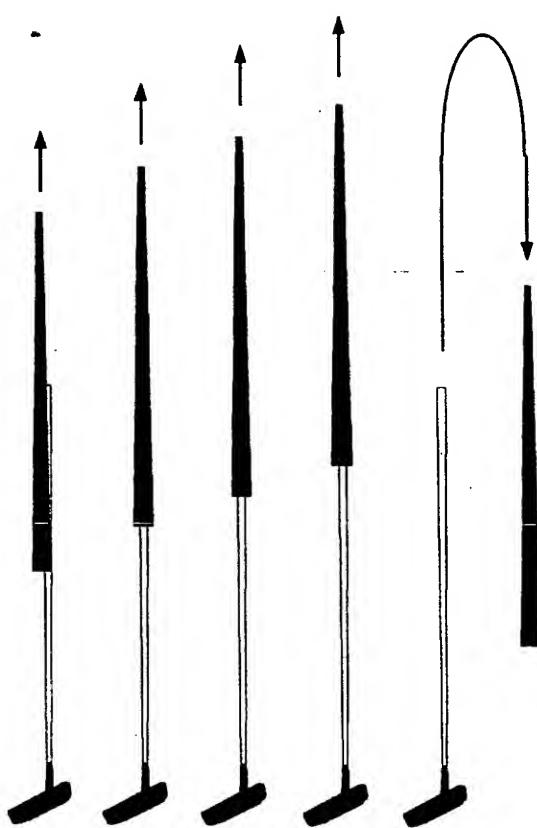


Fig. 9

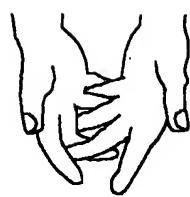


Fig. 10a

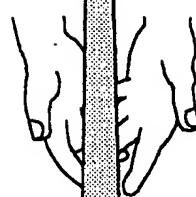


Fig. 10b

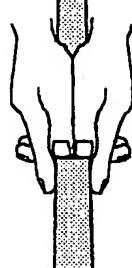


Fig. 10c

3/3

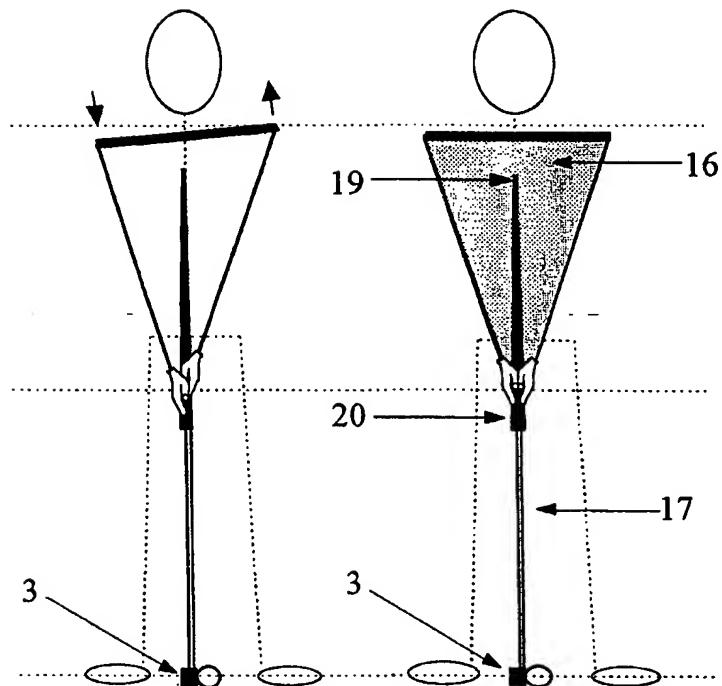


Fig. 11a

Fig. 11b

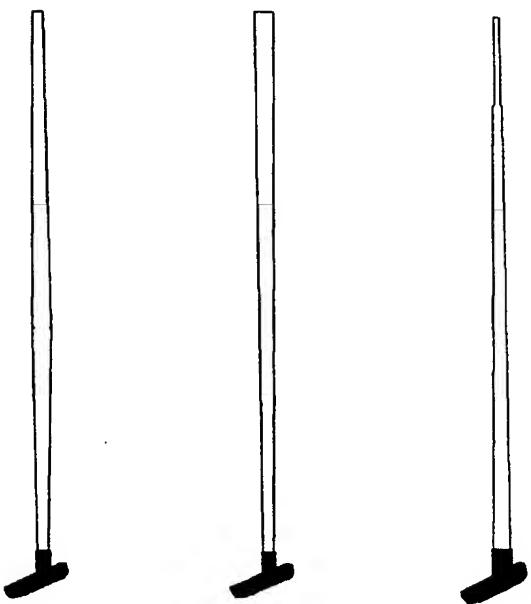


Fig. 12a

Fig. 12b

Fig. 12c

INTERNATIONAL SEARCH REPORT

International Application No.
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A. CLASSIFICATION OF SUBJECT MATTER		
Int Cl ⁶ : A63B 53/16		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC:A63B 53/16, 53/14		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	AU 33658/97 A (KOHRTZ) 31 December 1997 Whole document but see particularly page 2 lines 31-34 and page 2 line 13.	1, 2, 4, 13
P, X	GB 2309389 A (BATE) 30 July 1997 Whole document	6, 13
P, X	US 5649870 A (HARRISON) 22 July 1997 Whole document	6, 13
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C		<input checked="" type="checkbox"/> See patent family annex
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Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929		Authorized officer J.W. THOMSON Telephone No.: (02) 6283 2214

INTERNATIONAL SEARCH REPORT

 International Application No.
 PCT/NZ 98/00056

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	EP 781576 A (KITAHARA) 2 July 1997 Whole document	6, 7, 13
X	US 5452891 A (THOMAS) 26 September 1995 Whole document but see particularly column 5 line 56 to column 6 line 1.	1, 6, 13
X	US 5328185 A (FINNIGAN et al) 12 July 1994 Whole document but see particularly column 5 lines 5 to 13.	1, 4, 9
X	US 4163554 A (BERNHARDT) 7 August 1979 Whole document	7
X	US 3188086 A (PARMLEY) 8 June 1965 Whole document	6, 13
A	US 5460372 A (COOK) 24 October 1995 Whole document	2, 7
A	US 5169152 A (MARQUARDT) 8 December 1992 Whole document	2, 7

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/NZ 98/00056

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: 11, 12
because they relate to subject matter not required to be searched by this Authority, namely:
PCT Rule 39.1(iii) These claims are directed to a method for playing a game.
2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

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1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/NZ 98/00056

Box II Continued

The application claims seven distinct inventions. These are:

1. Claim 1 A grip longer than 35 cm.
2. Claims 3, 8 A tapered grip.
3. Claim 4 A grip with a volume greater than 225 cm³.
4. Claim 6 An adjustable length grip.
5. Claim 7 A club greater than 100cm with less than three grips and a non-circular grip.
6. Claim 9 A long putter with no grip.
7. Claim 13 A method of attaching a long grip to a short putter.

While these are all in the same art of golf clubs, they are not linked by a single inventive concept.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No.
PCT/NZ 98/00056

This Annex lists the known "A" publication level patent family member relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member		
AU	33658/97	WO	97/49462	SE	9602521
EP	781576	JP	9234257		
US	5169152	AU	29197/92	WO	9310868

END OF ANNEX